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RIGHT VENTRICULAR EJECTION FRACTION, PULMONARY ARTERY SIZE AND PULSATILITY INDEX ESTIMATED BY CARDIAC MAGNETIC RESONANCE IMAGING PREDICTS FUNCTIONAL STATUS IN PULMONARY ARTERIAL HYPERTENSION

Poster Contributions
Poster Hall B1
Saturday, March 14, 2015, 3:45 p.m.-4:30 p.m.

Session Title: CMR in Cardiomyopathy
Abstract Category: 18. Non Invasive Imaging: MR
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Authors: *Christopher Austin, Chad McRee, Jordan Ray, Mohamad Zetir, Brian Shapiro, Mayo Clinic, Jacksonville, FL, USA*

Background: Despite technical limitations, transthoracic echocardiography (TTE) is the most commonly used imaging modality for right ventricular assessment in patients with pulmonary arterial hypertension (PAH). Recent studies have demonstrated the utility of cardiac magnetic resonance (CMR) imaging in the evaluation of right ventricular function. We hypothesize that CMR measurements including right ventricular ejection fraction (RVEF), pulmonary artery (PA) area and PA pulsatility index may provide additional prognostic value in assessment of patients with PAH.

Methods: Sixty-eight patients with PAH diagnosed by TTE were prospectively enrolled in our study. Enrollees subsequently underwent hemodynamic, structural and functional evaluation of the right ventricle via same-day CMR and right heart catheterization. Complete PAH assessment including clinical, laboratory and functional evaluation at the time of CMR was performed. Pearson correlation of CMR measures including RVEF, PA area, and PA pulsatility index as well as functional measures including BNP and six-minute walk distance were analyzed. ANOVA analysis of CMR measures by echocardiographically-assigned PAH severity subgroups was also performed.

Results: Right ventricular ejection fraction, PA pulsatility index and PA area were significantly correlated with BNP (R= -0.44, R = -0.40, and R=0.30 respectively; $p<0.01$ for all). Right ventricular ejection fraction and PA pulsatility index were significantly correlated with six minute walk distance (R= 0.43, R=0.33, $p<0.01$ for both). RVEF, PA area and PA pulsatility index accurately stratified PAH severity subgroups as estimated by echocardiography ($p<0.01$ for all measures).

Conclusion: Evaluation of right ventricular and pulmonary artery structure and function by CMR demonstrates correlation with markers of functional status in PAH. This imaging modality may represent an important prognostic component in right ventricular evaluation in the PAH cohort.